



# Teacher Research Academy (TRA)

## Biotechnology

The Biotechnology Research Academy prepares teachers to conduct research in biotechnology with their students. The program is offered in four levels where each level builds on the knowledge and experience of the preceding level progressing the teacher from novice to mastery. The instruction provides teachers with a context to explain to students how science is applied, and includes hands-on activities using the science and technology of the discipline, lectures by practicing scientists, tours of research facilities, and opportunities to network with researchers and peers.

Teachers who complete the Teacher Research Academy in Biotechnology participate in hands-on instruction using the following biotechnology tools: DNA Extraction, Gel Electrophoresis, Restriction Digest, DNA Fingerprinting, Bacterial Transformation, Protein Chromatography, PCR, DNA Sequencing, Protein Analysis Using Western Blotting, and Bioinformatics. These instructional materials are aligned with the California and National Science Standards.

### WHEN:

**June 21 - June 23 Level - 1:** Three days of instruction. Participants gain skills and knowledge generally consistent with the requirements to teach advanced middle and high school science.

**June 28 - July 2 Level - 2:** Five days of instruction. Participants gain skills and knowledge generally consistent with the requirements to teach advanced placement and college preparatory courses.

**July 12 - July 16 Level - 3:** Five days of instruction preparing teachers to work in a mentored research experience.

**June 15 - Aug 8 Level - 4:** Eight-week mentored research experience. Teachers receive \$4,000 stipend. Internships are completed in the year following completion of Level III.

**WHERE:** Lawrence Livermore National Laboratory, Livermore, CA

**REGISTRATION:** Register on-line at <http://education.llnl.gov/academies>

**REGISTRATION FEE:** \$20.00 for each registration.

### WHAT TEACHERS GET:

- Increased understanding of science and technology.
- Experience using scientific equipment to perform standards aligned experiments.
- Preparation to guide student research projects.
- Instruction binder with classroom lessons.

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### MASTER OF SCIENCE IN EDUCATION:

Participants in the Teacher Research Academy can earn graduate course credit through the California State University (CSU) East Bay toward a Master of Science in Education degree, Curriculum Option, or extension credit.

***PLEASE FORWARD TO INTERESTED TEACHERS***